

C-Band SATCOM Range Communications System for ELVs using ESAs and High Dynamics Modem, Phase I

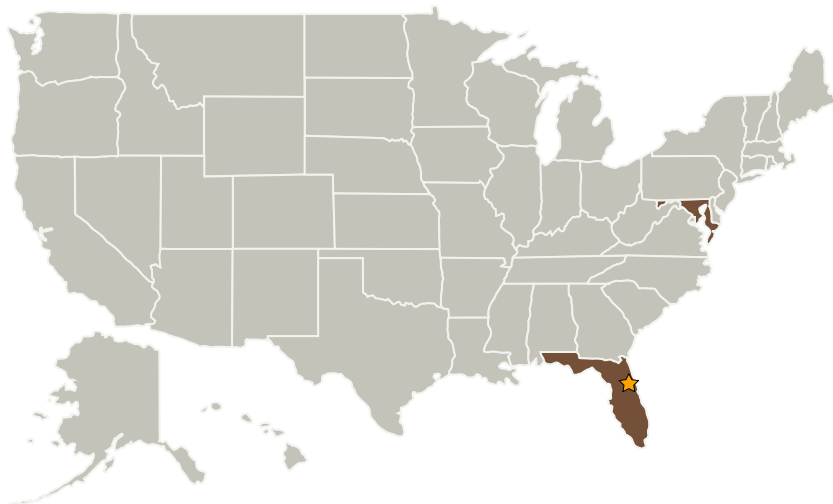
Completed Technology Project (2004 - 2004)



Project Introduction

Improving safety while increasing the pace of space launches requires improved communications capability. An increasing volume of real-time data from numerous sensors and systems can be transmitted to the ground if connecting links can be improved. One way to accomplish this is to use existing commercial satellites to supplement overburdened NASA communications systems. Used as an adjunct service, additional commercial capacity would act to increase launch safety, allowing an increased amount of data to be transponded to ground systems without detracting from the reliability of existing communication systems. Existing NASA links could continue to be used for mission critical requirements. Limitations of two technologies prevent the transponding large amounts of data via commercial satellites. The first is a conformal antenna technology that can provide high gain by steering its beam toward the GEO satellite. The second is high-speed modem technology that can track a remote modem despite the wide dynamics experienced during launch and maneuvers. Paratek proposes to design a dual-beam, passive, electronically steered phased array (utilizing our proprietary Parascan?, phase shifters) and a highly dynamic modem to provide the communications link for spaced-based range applications. The system will leverage commercial Intelsat C-Band transponder network (4 GHz & 6 GHz).

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Paratek Microwave, Inc.	Supporting Organization	Industry	Columbia, Maryland

Primary U.S. Work Locations

Florida	Maryland
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jaynesh I Patel

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.5 Revolutionary Communications Technologies
 - └ TX05.5.1 Cognitive Networking